The Limits of Economic Approaches

EES 3310/5310

Global Climate Change

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Class #33: Friday, April 9 2021

Overview

Barker's Critique

1. The global economy is a complex, nonlinear dynamic system undergoing technological change.
2. Intergenerational responsibilities are an ethical problem.

   Traditional economics tacitly adopt an extreme form of utilitarianism.
   Other ethical perspectives should also be considered.
3. Traditional economics assumes *continuity* and *path independence*.

   Both history and engineering point to *discontinuities* and *path dependence*.
4. Traditional economics assumes a mathematical *social welfare function* that ignores the realities of the political process:
   - negotiation,
   - fragile and unstable alliances,
   - the role of parties,
   - etc.

Traditional vs. New Economics

- Assumptions of traditional economics:
  - Individual preferences are fixed
  - Utilities can be added up and aggregated into a single dollar value
  - Technological innovation is not affected by climate policies
- Key policy messages from traditional economics:
  1. Use a carbon tax that starts small and then grows steadily
  2. It’s better to wait than to act now because:
     - Technology will reduce the costs of cutting emissions.
     - Economic growth will mean more money for cutting emissions in the future.
- “New economics”:
  - Preferences are malleable
  - Many important values cannot be translated to dollars
  - Technological innovation is affected by policy choices
- Key policy messages from new economics:
  1. “The benefits of strong early action far outweigh the economic costs of not acting” — N. Stern
  2. The focus should be on managing risk, not seeking definite returns on investments.

Uncertainty

- Cost-benefit analysis (traditional econ) focuses on maximizing the expected or average net benefits
- We don’t buy insurance to maximize the average benefits, but to pay a manageable cost (premium) in order to avoid unmanageable costs (house burns down)
- Martin Weitzman’s Dismal Theorem:
  - Even if there is only a one in a million chance that climate change would end civilization, the cost would be practically infinite, so it would be worth spending an enormous amount to avoid that possibility
  - Similar concern: A giant asteroid hitting the earth
    - Effective asteroid detection and defense would cost a few billion dollars
    - Government has spent around $650 million https://www.nasa.gov/planetarydefense

Path Dependence, Economics, and Technology

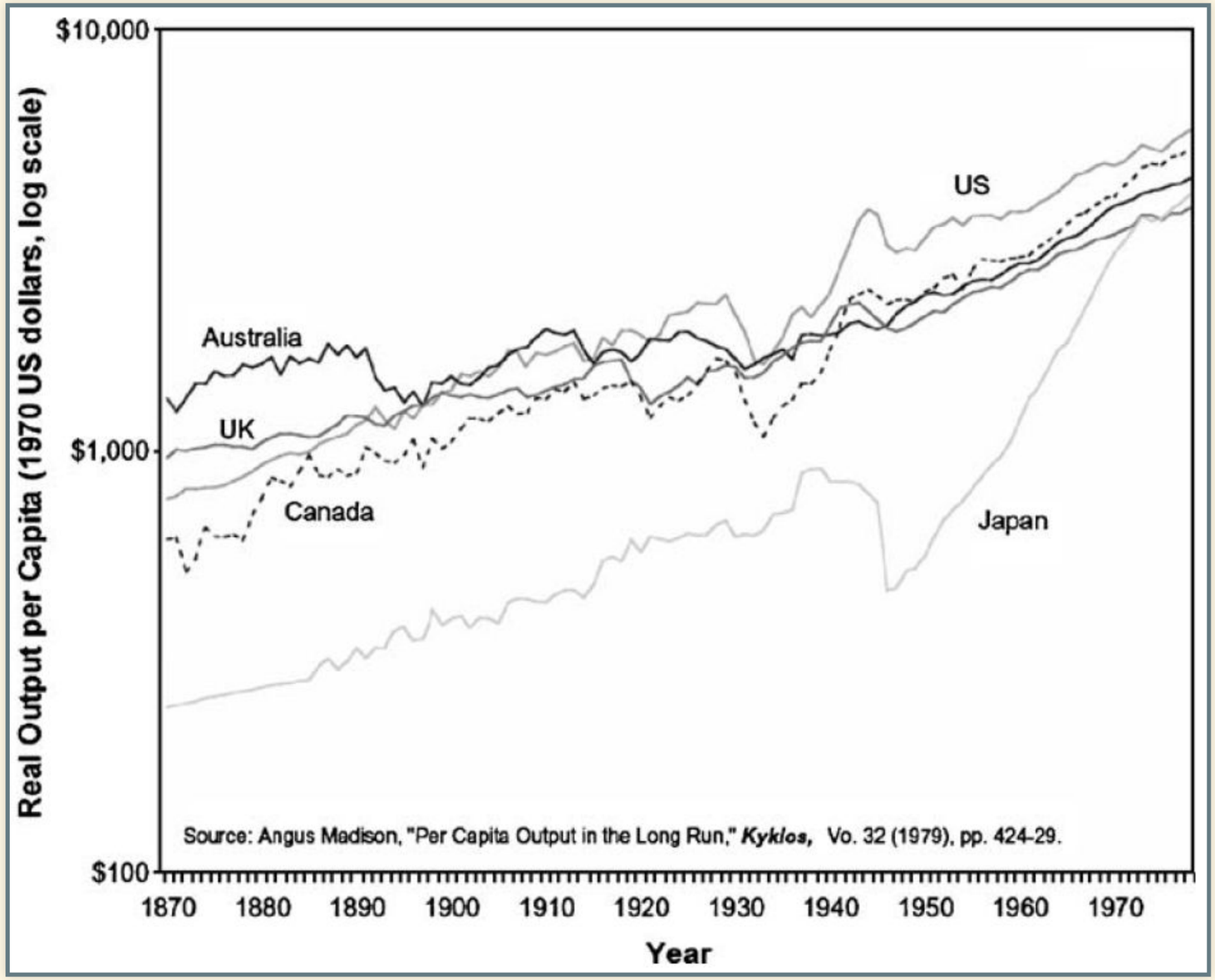
- Ideal: If you develop a better product for a lower price, it will dominate the market
- Complications:
  - Network effects:
    - One cell phone is not much good.
      - Need a network of people to call
    - Hydrogen vs. electric, vs. gasoline cars:
      - Cars need filling/charging stations,
      - Filling/charging stations need cars.
    - Similarly, VCR/DVD/etc.:
      - Players need movies,
      - Movies need players
  - Familiarity: QWERTY keyboards → lock-in
- Which technology is widely adopted depends on historical path

Ethics and Social Choice

- Traditional economics seeks to maximize the value of some *social welfare function*.
- But this does not address distribution of costs and benefits:
  - Poor nations suffer the most from climate change but did the least to cause it.
- Different people and different groups of people have different values:
  - no single function can account for the different priorities and preferences
- Values and preferences change over time:
  - Future generations may have very different preferences and priorities than we have.
    - But our actions force choices on them.

Adam’s Fallacy

What Does Economics Leave Out?



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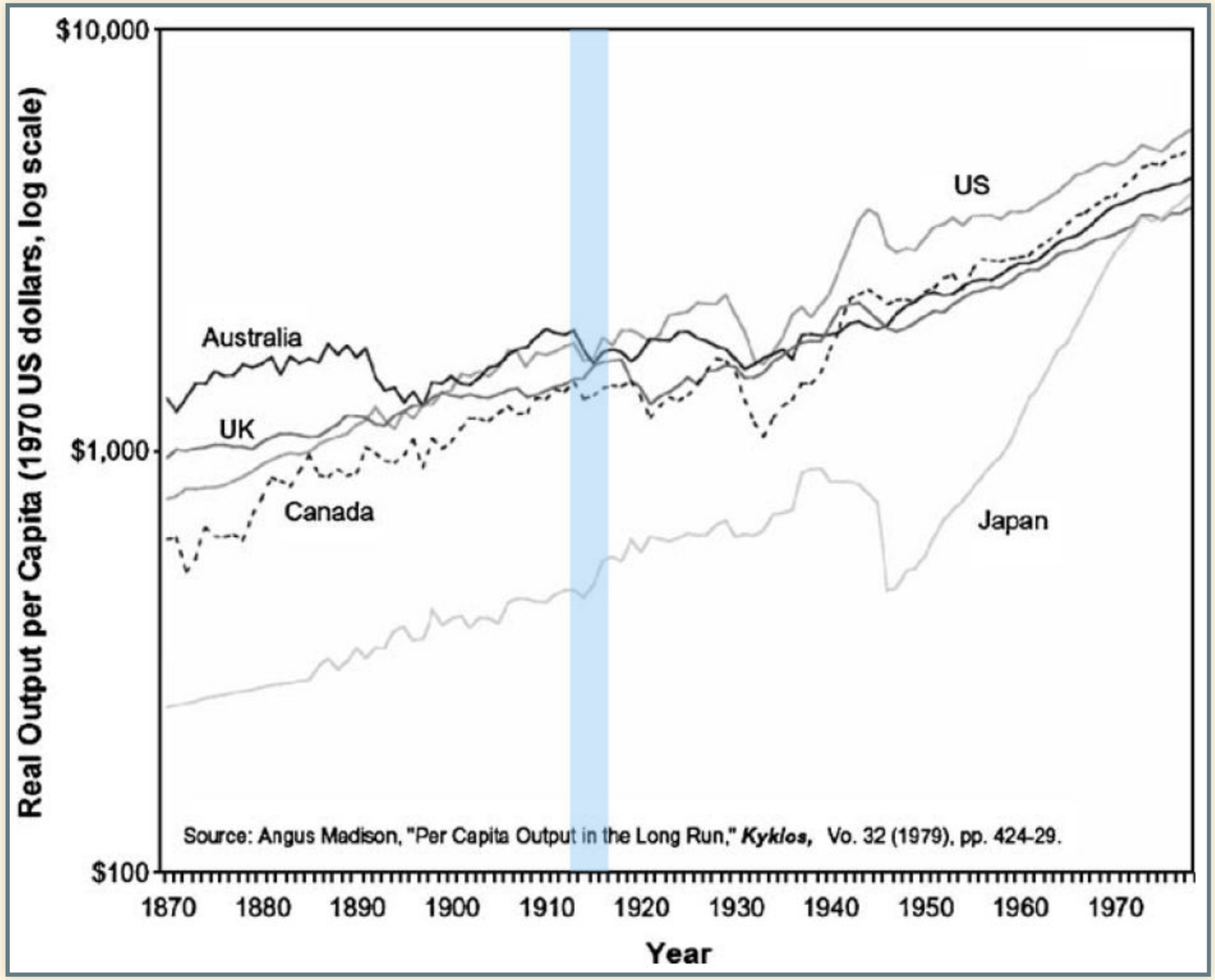

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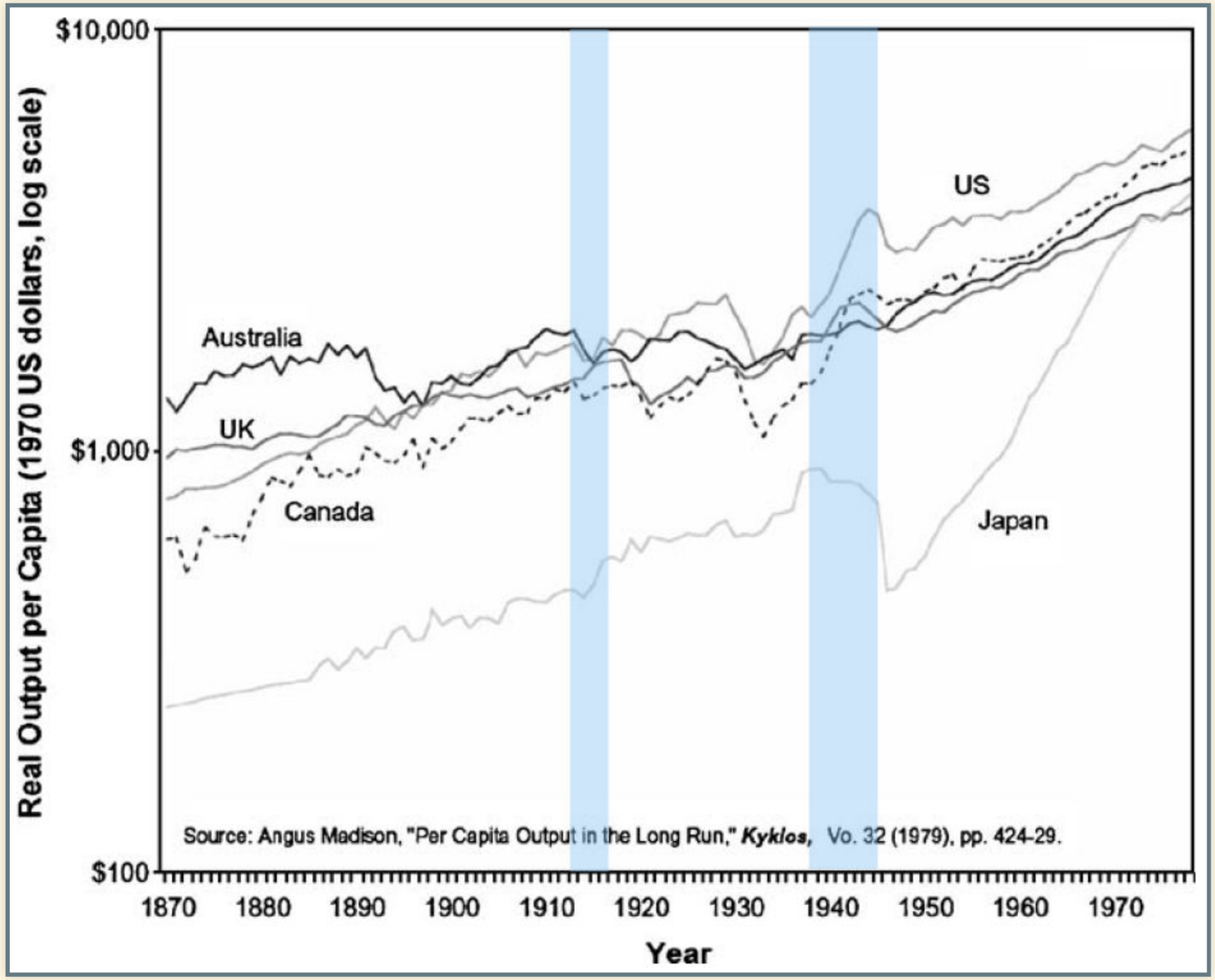

The Value of Non-Market Goods

[Five meters of sea-level rise] is something that should rather be avoided.
— R. Tol

The reason we should "rather avoid" drowning the coastal cities of the world is not primarily that this would reduce global GDP, but that drowning those cities would be a dreadful act of barbarism
— C. Jaeger et al.

Questions?
Discussion